CLAIMS

1. Particulate alumina having a mean particle size corresponding to a volume-cumulative 50% mean particle size (D50) falling within a range of 3 to 6 μm, having a ratio of D90 to D10 that is 2.5 or less, containing particles that have a particle size of at least 12 μm in an amount of 0.5 mass% or less, particles that have a particle size of 20 μm or more in an amount of 0.01 mass% or less and particles that have a particle size of 1.5 μm or less in an amount of 0.2 mass% or less, and containing an α-phase as a predominant phase.

2. The particulate alumina according to claim 1, wherein it has a ratio of longer diameter (DL) to shorter diameter (DS) that is 2 or less and a ratio of D50 to mean primary particle size (DP) that is 3 or less.

3. The particulate alumina according to claim 1 or claim 2, wherein it contains Na_2O in an amount of 0.1% or less, B in an amount of at least 80 ppm and CaO in an amount of at least 500 ppm.

4. A method for producing particulate alumina, comprising the steps of adding, to aluminum hydroxide or alumina, a boron compound, a halide and a calcium compound to form a mixture and firing the mixture.

5. The method according to claim 4, wherein the halide is at least one species selected from the group consisting of aluminum halide, ammonium halide, calcium halide, magnesium halide and hydrogen halide.

6. The method according to claim 4 or claim 5, wherein the boron compound is at least one species selected from among boric acid, boron oxide and borate salts.

7. The method according to any one of claims 4 to 6, wherein the halide is at least one species selected from the group consisting of aluminum fluoride, aluminum chloride, ammonium chloride, ammonium fluoride, calcium fluoride,

calcium chloride, magnesium chloride, magnesium fluoride, hydrogen fluoride and hydrogen chloride.

8. The method according to any one of claims 4 to 7, wherein the calcium compound is at least one species selected from the group consisting of calcium fluoride, calcium chloride, calcium nitrate and calcium sulfate.

9. The method according to any one of claims 4 to 8, wherein the boron compound is added in an amount, as reduced to boric acid, falling within a range of 0.05 to 0.50 mass% based on alumina; the calcium compound is added in an amount, as reduced to Ca, falling within a range of 0.03 to 0.10 mass% based on alumina; and the halide is added in an amount falling within a range of 0.20 to 0.70 mass% based on alumina.

10. The method according to any one of claims 4 to 9, wherein the step of firing is performed at a temperature falling within a range of 1,200 to 1,550°C and for a maximum temperature retention time falling within a range of 10 minutes to 10 hours.

11. The method according to any one of claims 4 to 10, further comprising the step of crushing the fired mixture by means of an airflow pulverizer employing a nozzle jet gauge pressure falling within a range of 2×10^5 Pa to 6×10^5 Pa.

12. The method according to any one of claims 4 to 10, further comprising the step of crushing the fired mixture by means of a ball mill or a vibration mill employing alumina balls, followed by the step of removing microparticles by use of an airflow classifier.

13. A composition containing the particulate alumina of claim 1 in an amount of at least 10 mass% and not greater than 90 mass% and a polymer.

14. The composition according to claim 13, wherein the polymer is at least one species selected from aliphatic resin, unsaturated polyester resin, acrylic

resin, methacrylic resin, vinyl ester resin, epoxy resin and silicone resin.

15. The composition according to claim 13, wherein the polymer is an oily substance.

16. The composition according to claim 13, wherein the polymer has a softening point or a melting point falling within a range of 40 to 100°C.

17. An electronic part or a semiconductor device containing the composition of claim 13 between a heat source and a radiator.